Cont

extracting from the modulated OFDM signal at least one, but not all the frequency subbands, by filtering; and

performing demodulation processing solely on the frequency carriers contained in the extracted subbands of the modulated OFDM signal.

15. (New) Method according to claim 14, characterized in that said subbands are adjacent.

16.(New) Method according to claim 14, characterized in that said subband grouping step is preceded by an independent coding step and frequency and time interlacing of each of said source signals, so as to obtain a set of coded signals designed to modulate each of said carrier frequencies of the subband assigned to said source signal.

17.(New) Method according to claim 14, wherein the modulated OFDM signal is a single signal tuned as a whole by a sole modulator modulating simultaneously the substantially orthogonal frequency carriers, the orthogonal frequency carriers being orthogonal in each subband and from subband to subband.

18.(New) Method according to claim 14, characterized in that said subbands have identical bandwidths.

19.(New) Method according to claim 14, characterized in that said source signals are assigned to said subbands in a manner that varies with time, in order to maximize the frequency diversity.

20.(New) Method according to claim 19, characterized in that said assignment is modified on each transmission of a frame of said signal.

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21.(New) Method according to claim 14, characterized in that at least a first of said source signals corresponds to basic information for a program and at least a second of said source signals corresponds to information complementary to said basic information, in order to define at least two receiver quality levels:

- a first quality level applicable to receivers capable of processing only the subband corresponding to said first course signals; and
- a second quality level corresponding to receivers capable of processing subbands corresponding to the first and second source signals.

22. (New) Method according to claim 14, characterized in that performing demodulation processing further comprises:

selecting a given program corresponding to at least one of the frequency subbands using a selection means; and

acting on the carrier frequencies contained in the selected subband(s) using a mathematical transformation means.

23.(New) Method according to claim 22, characterized in that said selection means include analog transposition means including a first RF transposition oscillator and a second IF transposition oscillator, and means of controlling an oscillation frequency of said first RF transposition oscillator and/or said second IF transposition oscillator as a function of the selected subbands, so that the selected subbands are centered on a predetermined frequency.

24.(New) Method according to claim 22, characterized in that said selection means comprises:

first analog transposition means and second digital transposition means that are variable as a function of the selected subband(s); and

subsampling means.

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25.(New) Method according to claim 22, characterized in that said mathematical transformation means act on a number of carrier frequencies slightly exeeding the number of carrier frequencies contained in the extracted subband(s), so as to compensate for imperfection due to extraction filtering of said subbands.

26.(New) A method for transmitting and receiving an OFDM signal, the method comprising:

obtaining at least two independent source signals, each source signal being in the form of an independent series of coded bits;

assigning a determined frequency band on which the OFDM signal will be transmitted defining approximately orthogonal carrier frequencies in the determined frequency band;

breaking the determined frequency band down into at least two frequency subbands, each of said subbands comprising a set of said approximately orthogonal carrier frequencies;

assigning each independant source signal to one of said frequency subbands;

transmitting a modulated OFDM signal by selectively modulating the carrier frequencies of each frequency subband with the coded bits of the correspondingly assigned source signal and grouping said modulated OFDM signal being tuned and transmitted as a whole, so that said frequency carriers are orthogonal in each of said subbands and from subband to subband;

receiving the modulated OFDM signal;

extracting at least one but less than all of the frequency subbands from the received OFDM signal by filtering; and

performing demodulation processing solely on the frequency carriers contained in the extracted subbands of the received modulated OFDM signal.

27.(New) A receiver of at least one independent source signal, said independent source signals being transmitted according to the steps of:

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obtaining said at least two independent source signals, in the form of independent series of coded bits;

assigning a determined frequency band to an OFDM signal to be transmitted, several approximately orthogonal carrier frequencies being defined in said frequency band;

breaking down said frequency band into at least two frequency subbands, each of said subbands comprising a set of said approximately orthogonal carrier frequencies;

assigning each of said frequency subbands to one of said independent source signals;

selectively modulating the carrier frequencies of each frequency subband with the coded bits of the corresponding source signal;

grouping said modulated frequency subbands to form a modulated OFDM signal;

tuning and transmitting the modulated OFDM signal as a whole;

said receiver comprising:

- a signal receiver of the modulated OFDM signal;
- an extractor of at least one, but not all the frequency subbands, by filtering from the modulated OFDM signal;
- and a demodulation processor acting solely on the frequency carriers contained in the extracted subbands of the modulated OFDM signal.

28.(New) Receiver according to claim 27, characterized in that said extractor includes a first RF transposition oscillator and a second IF transposition oscillator, and a controller of the oscillation frequency of said first and/or said second oscillator as a function of selected subbands, so that they are centered on a predetermined frequency.

29.(New) Receiver according to claim 27, characterized in that said extractor comprises a first analog transposer and a second digital transposer that are variable as a function of the selected subband(s), and a subsampler.

30.(New) Receiver according to claim 27, characterized in that said demodulation processor comprises a mathematical transformation acting on a number of carrier frequencies slightly exceeding the number of carrier frequencies contained in the extracted subband(s), so as to compensate for the imperfection due to extraction filtering of said subbands.

31.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, so that a receiver can extract at least one of said subbands, but not all subbands from the transmitted OFDM signal by filtering, and can carry out demodulation processing solely on the frequency carriers contained in the extracted subbands, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband, so that a receiver can receive the whole modulated OFDM signal and process one source signal, without processing the whole OFDM signal.

32.(New) Signal according to claim 31, characterized in that said subbands are adjacent.

33.(New) Signal according to claim 31, characterized in that at least two subbands have identical bandwidths.

34.(New) Signal according to claim 31, characterized in that said source signals are assigned to said subbands in a manner that varies with time, in order to maximize the frequency diversity.

35.(New) Signal according to claim 34, characterized in that said assignment is modified on each transmission of a frame of said signal.

36.(New) Signal according to claim 31, characterized in that at least a first of said source signals corresponds to basic information for a program and at least a second of said source signals corresponds to information complementary to said basic information, in order to define at least two receiver quality levels:

- a first quality level applicable to receivers capable of processing only the subband corresponding to said first source signals; and
- a second quality level corresponding to receivers capable of processing subbands corresponding to the first and second source signals.

37.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that the processing to be done in a receiver of said modulated OFDM signal is reduced.

38.(New) Signal according to claim 37, characterized in that said subbands are adjacent.

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39.(New) Signal according to claim 37, characterized in that at least two subbands have identical bandwidths.

40.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said course signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that it is possible to transmit several source signals without it being necessary to widen a frequency band allocated to said modulated OFDM signal.

41.(New) Signal according to claim 40, characterized in that said subbands are adjacent.

42.(New) Signal according to claim 40, characterized in that at least two subbands have identical bandwidths.

43.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, so that at least one receiver of at least a first type of

receivers can extract at least one of said subbands, but not all subbands from the transmitted OFDM signal by filtering, and can carry out demodulation processing solely on the frequency carriers contained in the extracted subbands, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that said modulated OFDM signal can be received and processed by at least two types of receivers, corresponding to at least two reception qualities:

- a first type of receivers processing a first set of at least one subband;
- a second type of receivers processing said first set of at least one subband and at least one second set of at least one subband not belonging to said first set.

44.(New) Signal according to claim 43, characterized in that said subbands are adjacent.

45.(New) Signal according to claim 43, characterized in that at least two subbands have identical bandwidths.

46.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

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so that at least one subband can be coded with a coding distinct of coding applied to other subbands.

C4

47.(New) Signal according to claim 46, characterized in that said subbands are adjacent.

48.(New) Signal according to claim 46, characterized in that at least two subbands have identical bandwidths.

49.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that a set of at least one subband can be specifically interlaced in time and/or in frequency.

50.(New) Signal according to claim 49, characterized in that said subbands are adjacent.

51.(New) Signal according to claim 49, characterized in that at least two subbands have identical bandwidths.

52.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, so that a receiver can extract at least one of said subbands, but not all subbands from the transmitted OFDM signal by filtering, and can carry out demodulation processing solely on the frequency carriers contained in the extracted subbands, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that a receiver can select a given program, among at least two programs carried by said OFDM modulated signal.

53.(New) Signal according to claim 52, characterized in that said subbands are adjacent.

54.(New) Signal according to claim 52, characterized in that at least two subbands have identical bandwidths.

55.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, so that at least one receiver can extract at least one of said subbands, but not all subbands from the transmitted OFDM signal by filtering, and can carry out

demodulation processing solely on the frequency carriers contained in the extracted subbands, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that a receiver processes said OFDM modulated signal by applying a DFT only on said extracted subbands.

56.(New) Signal according to claim 55, characterized in that said subbands are adjacent.

57.(New) Signal according to claim 55, characterized in that at least two subbands have identical bandwidths.

58.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, so that at least one receiver can extract at least one of said subbands, but not all subbands from the transmitted OFDM signal by filtering, and can carry out demodulation processing solely on the frequency carriers contained in the extracted subbands, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that a receiver processes said OFDM modulated signal by controlling an RF transposition oscillator and/or an IF transposition oscillator as a function of the extracted subband(s), so that they will be centered at a predetermined frequency.

59.(New) Signal according to claim 58, characterized in that said subbands are adjacent.

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60.(New) Signal according to claim 58, characterized in that at least two subbands have identical bandwidths.

61.(New) An OFDM signal to be transmitted to at least one receiver, said signal being composed of a plurality of substantially orthogonal frequency carriers, said carriers being modulated by distinct data and simultaneously transmitted to form said modulated OFDM signal on a determined frequency band, said OFDM signal including at least two source signals,

wherein each of said source signals is assigned to at least a distinct one of at least two frequency subbands, each of said at least two frequency subbands comprising a set of said substantially orthogonal frequency carriers, so that a receiver can extract at least one of said subbands, but not all subbands from the transmitted OFDM signal by filtering, and can carry out demodulation processing solely on the frequency carriers contained in the extracted subbands, said OFDM signal being a single signal tuned as a whole by a sole modulator modulating simultaneously said plurality of substantially orthogonal frequency carriers, said plurality of orthogonal frequency carriers being orthogonal in each subband and from subband to subband,

so that a receiver processes said OFDM modulated signal by varying analog/digital transposition means and digital transposition means as a function of the extracted subband(s).

62.(New) Signal according to claim 61, characterized in that said subbands are adjacent.

63.(New) Signal according to claim 61, characterized in that at least two subbands have identical bandwidths.--

REMARKS

It is respectfully requested that this Substitute Preliminary Amendment be entered in place of the Preliminary Amendment filed July 31, 2001. In this Substitute Preliminary Amendment,